RTI ZW9 Scenes, Scene Keypads, Virtual Scene Controllers, Central Scene Controllers, and Switch All.

Overview

This document is intended to explain in detail the recently restructured ZW9 scene, central scene, virtual scene, and switch all capabilities included in ID 9.x and in Integration Designer APEX.

This document will be broken up into the following sections for easy reference:

1) Scenes
2) Scene Keypads
3) Virtual Scene Controllers
4) Central Scene Controllers
5) Switch All

Please read through and understand the concepts outlined in this document before assuming there is an issue with the ZW9 or RTI system as not all Z-Wave devices follow or interpret the requirements outlined by the Z-Wave Certification process as intended, nor do all devices execute the functionality in the same manner from device to device. More information will be available in the separate sections of this document.

Section 1 - Scenes

Scenes referenced in this document refer to the scenes that are configured directly in Z-Wave Manager. Scenes allow for multiple scene capable devices to be controlled by a single Z-Wave command. Some devices such as dimmers can be adjusted to a specific level based upon the setting stored for the device in the scene.

Not all Z-wave devices can be controlled by a Z-Wave scene directly, but using scene events in the RTI system, other devices such as non-scene capable Z-Wave devices, or even non-Z-Wave devices can be operated by scene events.

Scene events will execute regardless of whether the RTI system or a Scene Keypad* executes the scene command.

* Please refer to the Scene Keypad section for Scene Keypad compatible devices.

Below is an example of the scene section in Z-Wave Manager.

In the above example Scene 1 has been named SC Floor Lamp and has been configured to turn on the RTI Lamp Dimmer to 80% light level when the Scene activation is executed on the system. The Scene Deactivation will in turn set the RTI Lamp Dimmer back to Off (level of 0).

It is important to remember that every scene created in Z-Wave Manager will have an activated (On) and deactivated (Off) state, but only the activated can be configured. This is because Z-Wave itself does not have a scene deactivated function, but many scene keypad devices will toggle between activating the scene and turning off all devices associated with the scene.

Because of this, it is not recommended that any Off or level 0 values are stored in the scene since those will essentially be the values when the scene is deactivated.

Scenes created in Z-Wave Manager are not mutually exclusive meaning each scene in the Z-Wave system has its own On/Off state and no scene can affect the state of another scene. This in turn would mean that if devices are stored in multiple scenes, the shared devices would be set to the value of the last scene that was activated, but if a different scene was first activated to control the shared devices, that scene would still show as active until it was deactivated, which would then cause all shared devices to turn off.

It is important to understand this when using the scene activated/deactivated variables for displaying the scene status, when executing the scene events, or when attaching scene to a Scene Keypad device.

As soon as scenes are setup using Z-Wave Manager, they will show up in ID or ID APEX in the variables, events, and driver command sections. Auto-Programming in APEX is not yet available for scenes in ID APEX.

In order to view the events in ID APEX, it is recommended the ZW9 be added to the global section of the work space. To add the ZW9 to the workspace, proceed as if you were adding any item to the workspace, which once the ZW9 has been configured, a Z-Wave Tab will be available in the Add Workspace Item of ID APEX.

Below is a screen shot of the Z-Wave tab, of which the ZW9 is not listed because it has already been added to the workspace in the project used to develop this document.
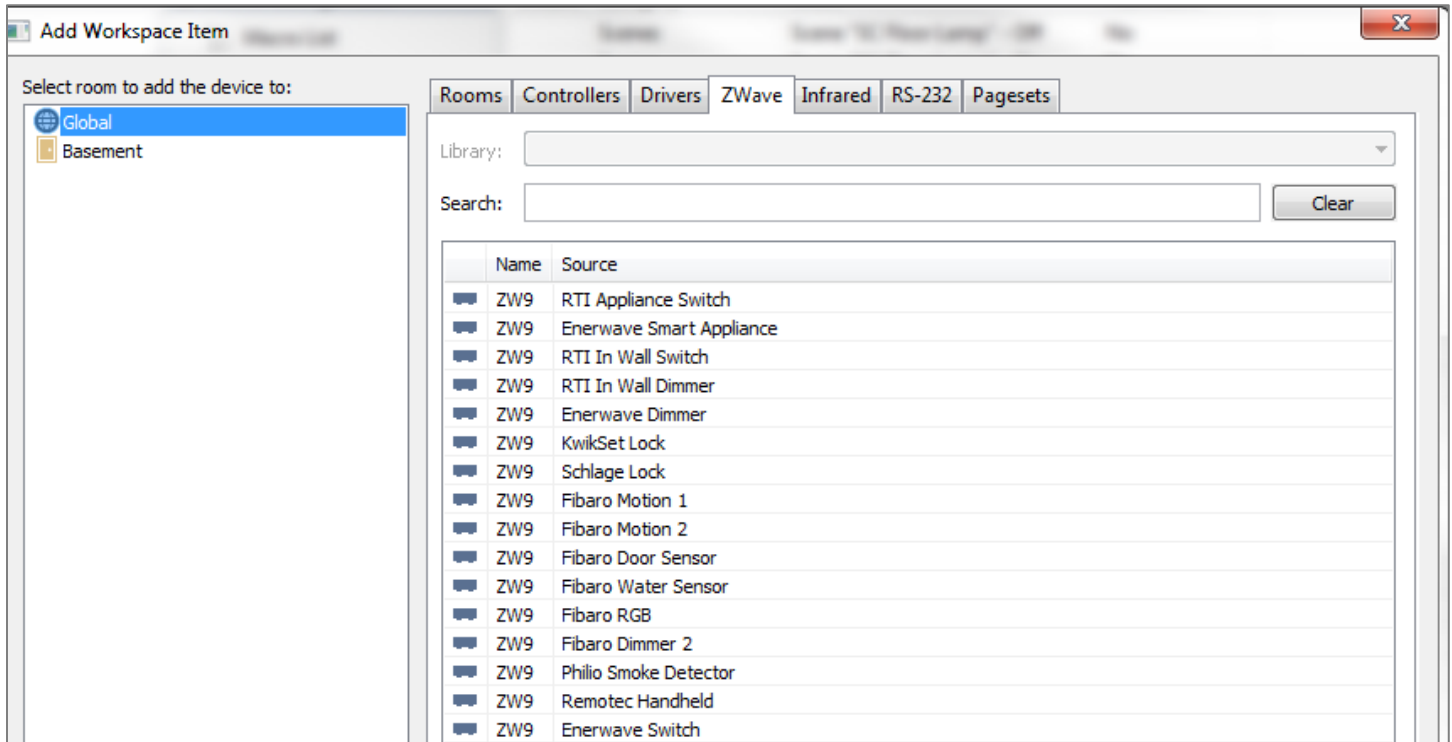
Once the ZW9 has been added to the workspace, selecting the ZW9 from the Global/Sources category will display the ZW9 Source Configuration page. If the Source Events is then selected, the available scene events and additional ZW9 events will be available for editing.

Below is a screenshot of the ZW9 Source Events from ID APEX.

You will see in the example that the scene events are named using what the scene was named in Z-Wave Manager, followed by an On or Off for what state of the scene triggers the event.

In ID 9.x all scene functions, variables, and events that are set up using Z-Wave Manager will be available just as they would with any standard driver.

Section 2 – Scene Keypads

It is important to know that not all Z-Wave Scene Keypad/Controller devices operate in the same manner. Because of this, the only Scene Keypad/Controllers on the market that will get designated by Z-Wave Manager and the ZW9 as Scene Keypads are the RTI 5 Scene Keypad and the 5 Scene keypads offered by Eaton/Cooper Aspire.

What does this mean? Only the RTI or Eaton/Cooper Scene Keypads will have the ability to utilize the Scenes setup in Z-Wave Manager. In fact, the RTI or Eaton/Cooper Scene Keypad devices will require the scenes that are setup in Z-Wave Manager be attached to the scene buttons of the devices in order for the Scene Keypad devices to operate with the ZW9. Failure to attach scenes to the Scene Keypads will result in the device not appearing to operate because the device does not know what it is supposed to do.

It is also important to note that no two or more buttons on a single Scene Keypad should have the same scene attached. Individual buttons across multiple keypads can be attached to the same scene which will provide access to the scene from multiple locations.

Below is a screenshot of a RTI 5-button Scene keypad with scenes attached to the buttons.
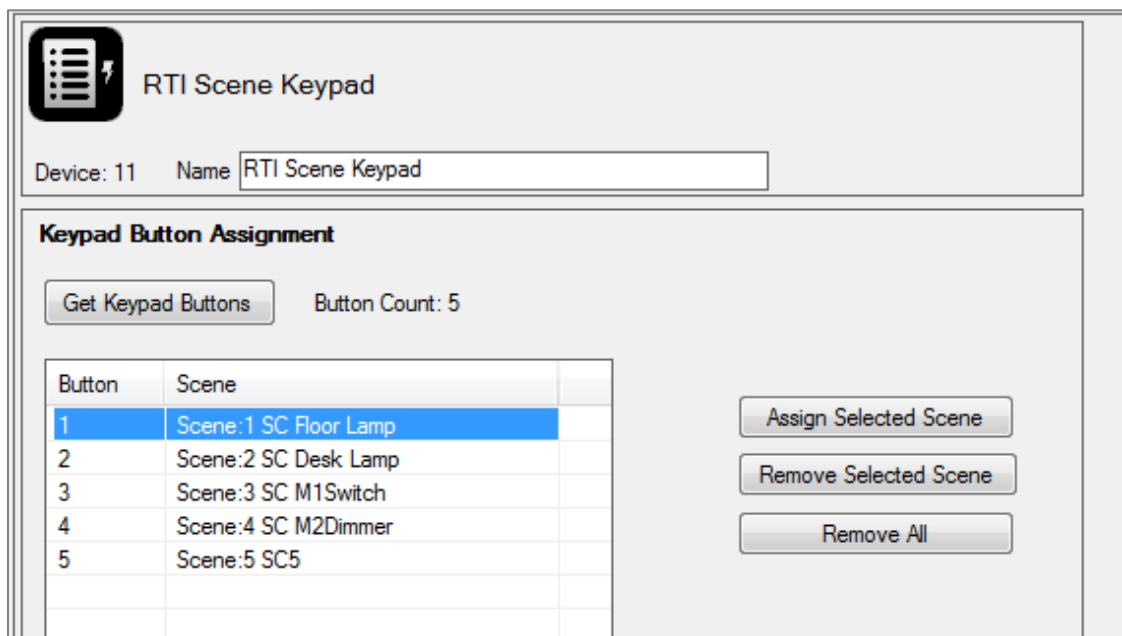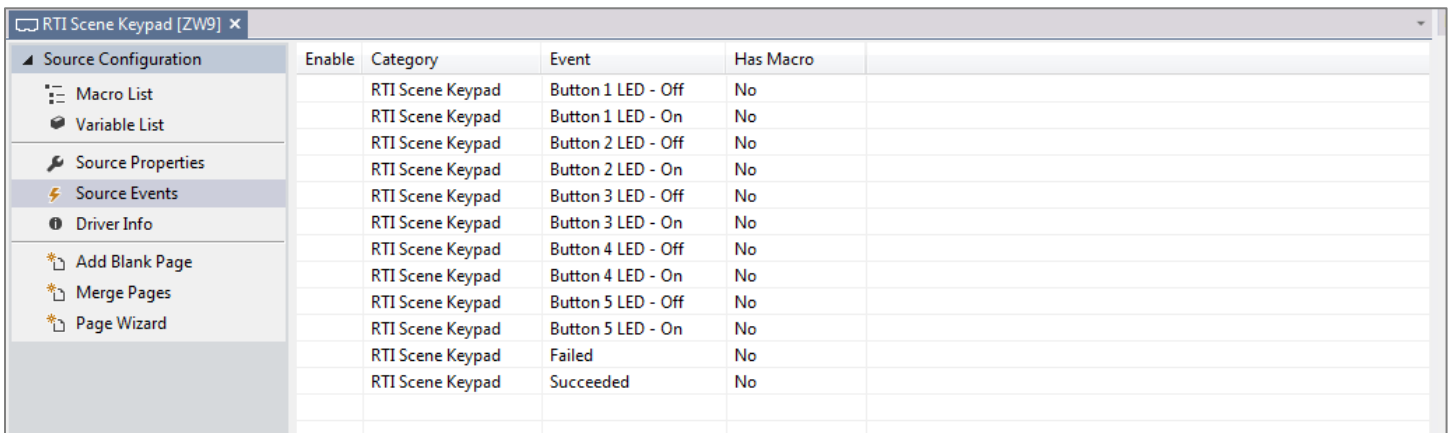
Assigning scenes to a Scene Keypad is as simple as selecting on the Scene column of the button to be assigned and selecting the scene from the drop-down list. Once the scene name is selected, the Assign Selected Scene to the right of the assignment window must be selected. This will now assign the scene to the physical keypad with all of the scene information required for the Scene Keypad to execute the scene over the Z-Wave network.

Once Scenes are attached to a Scene Keypad, events and variables will be generated for that device when returning to ID or ID APEX.

In ID the events and variables show up as they do for any standard driver, but in ID APEX, the Scene Keypad must be added to the workspace just as the ZW9 needed to from the previous section although Scene Keypads can be added to any room in the workspace.

Once added to the workspace, selecting the Scene Keypad from the Sources section in the room will open up the source configuration for the Scene Keypad. To view the events available, select on the Source Events. See screenshot below.

Enable	Category	Event	Has Macro
	RTI Scene Keypad	Button 1 LED - Off	No
	RTI Scene Keypad	Button 1 LED - On	No
	RTI Scene Keypad	Button 2 LED - Off	No
	RTI Scene Keypad	Button 2 LED - On	No
	RTI Scene Keypad	Button 3 LED - Off	No
	RTI Scene Keypad	Button 3 LED - On	No
	RTI Scene Keypad	Button 4 LED - Off	No
	RTI Scene Keypad	Button 4 LED - On	No
	RTI Scene Keypad	Button 5 LED - Off	No
	RTI Scene Keypad	Button 5 LED - On	No
	RTI Scene Keypad	Failed	No
	RTI Scene Keypad	Succeeded	No

With Scene Keypads, the variables and events available will be for the LED status of the buttons only. In many cases, these variables and events will be of no value except for showing the last known state of the LED, and may not reflect the true state of the scene attached to the button due to possible Z-Wave interference when trying to either get or set the LED status.

When a scene is activated or deactivated directly from the RTI system, the XP and ZW9 will attempt to update the LEDs across all Scene Keypads that have the particular scene attached to any of the buttons. If a scene is activated or deactivated from a Scene Keypad and the same scene is attached to another Scene Keypad in the system, the XP/ZW9 will attempt to sync any remaining buttons across the system.

It is important to note that the more devices stored in a scene and the more Scene Keypads attached to the scene can impact the performance of updating the buttons across the system and the polling of the devices that are controlled through the scene.

It is not recommended that scenes be used to turn on or shut down an entire Z-Wave system. For this the Switch All should be used.

Section 3 – Virtual Scene Controllers

New to ID 9.x and available in ID APEX are what is referred to as "Virtual Scene Controllers".

Virtual Scene Controller are essentially any Scene Controller capable device that is not a RTI or Eaton/Cooper 5-Button Scene Keypad. There are two types of Virtual Scene Controllers, Fixed Button Scene Controllers and plain Virtual Scene Controllers. The XP system does not differentiate between the two, but Z-Wave Manager does so it is important to know both types when setting them up in Z-Wave Manager.

To describe what makes a Virtual Scene Controller different than a Scene Keypad you have to refer back to the statement in the Scene Keypad section "It is important to know that not all Z-Wave Scene Keypad/Controller devices operate in the same manner."

Virtual Scene controllers do not allow the XP/ZW9 the ability to acquire the LED status of the device, do not send the off function to devices stored in scenes attached to the device's buttons, and/or do not allow the scene to be attached dynamically to the device (fixed).

What Virtual Scene Controllers will offer the RTI ZW9 system is the ability to call out events specific to the scenes attached to the device itself. This make them a very versatile addition to the RTI/ZW9 system as if adding an additional remote.

Fixed Scene Controllers do not allow Z-Wave manager to change the scene ID attached to its buttons so they number of buttons and the scene IDs the device uses must be defined in Z-Wave Manager before the device will operate whit the XP/ZW9.

Virtual Scene Controllers require scene IDs be attach to the buttons on the device over Z-Wave but being as they do not follow the same guidelines that the RTI and Eaton/Cooper Scene Keypads do, any scene ID from 1-255 can be used. When attaching scene IDs to a Virtual Scene Controller, the scene ID is sent along with the association of the ZW9 only. This allows for the ZW9 to see the scene activate command from the device to be received and an event to be executed in the XP.

With all Virtual Scene Controllers (including the fixed version) no scene deactivate capabilities are available, nor will any LEDs be updated other than the ability of the device itself to update its own LEDs.
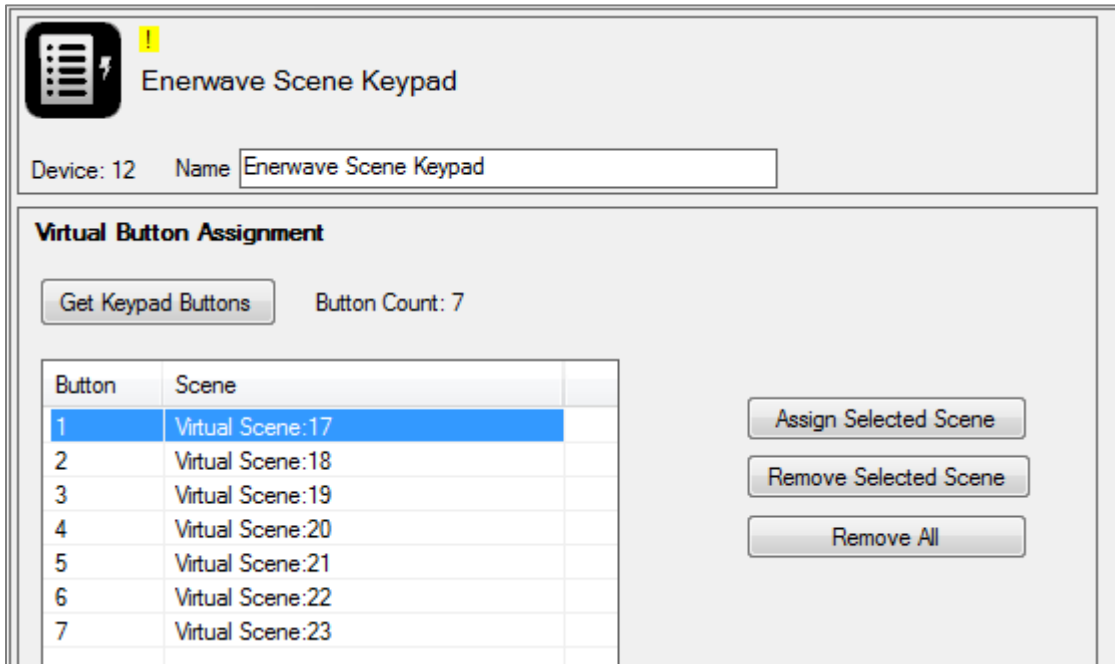
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Below is a screenshot of a configured Aeotec 4 button keyfob as a fixed button Virtual Scene Controller.

Below is a screenshot of a configured Enerwave 7-button controller as an assignable Virtual Scene Controller.

As can be seen in the screenshots, both assignment windows look very similar, but in the case fixed scene version the Button Count can be modified and there are no assignment buttons. The assignable version does not allow for the button count to be changed, and does require the Assign Selected Scene be selected after configuring the Scene column.

Once a Virtual Scene Controller is setup, events and variables will be available in ID 9.x and as far as ID APEX, the device must be added to the workspace just as the Scene Keypads would be added.

There are no variables for the Virtual Scene controllers with exception to Communication Status and Battery Level where applicable.

Below are screenshots for both of the Virtual Scene Controller events that are created by ID and/or ID APEX.

	Enable	Category	Event	Has Macro	
☐ Aeotech Keyfob [ZW9] ✕					▾
▲ Source Configuration		Aeotech Keyfob	Scene 1 Activated	No	
⠿ Macro List		Aeotech Keyfob	Scene 2 Activated	No	
● Variable List		Aeotech Keyfob	Scene 3 Activated	No	
		Aeotech Keyfob	Scene 4 Activated	No	
🔧 Source Properties		Aeotech Keyfob	Scene 5 Activated	No	
⚡ Source Events		Aeotech Keyfob	Scene 6 Activated	No	
❶ Driver Info		Aeotech Keyfob	Scene 7 Activated	No	
		Aeotech Keyfob	Scene 8 Activated	No	
⬚ Add Blank Page		Aeotech Keyfob	Failed	No	
⬚ Merge Pages		Aeotech Keyfob	Succeeded	No	
⬚ Page Wizard					

	Enable	Category	Event	Has Macro	
☐ Enerwave Scene Keypad [ZW9] ✕					▾
▲ Source Configuration		Enerwave Scene Keypad	Scene 17 Activated	No	
⠿ Macro List		Enerwave Scene Keypad	Scene 18 Activated	No	
● Variable List		Enerwave Scene Keypad	Scene 19 Activated	No	
		Enerwave Scene Keypad	Scene 20 Activated	No	
🔧 Source Properties		Enerwave Scene Keypad	Scene 21 Activated	No	
⚡ Source Events		Enerwave Scene Keypad	Scene 22 Activated	No	
❶ Driver Info		Enerwave Scene Keypad	Scene 23 Activated	No	
		Enerwave Scene Keypad	Failed	No	
⬚ Add Blank Page		Enerwave Scene Keypad	Succeeded	No	
⬚ Merge Pages					
⬚ Page Wizard					

Section 4 – Central Scene Controllers

New to ID 9.x and available in ID APEX are what is referred to as "Central Scene Controllers".

Central Scene Controllers are devices that support the Central Scene command class and are generally not configurable other than through the devices configuration parameters. Although there are no real scene IDs to be attached to Central Scene Controllers, they can provide feedback information for multiple scene IDs referred to as actions when applicable. All Central Scene controllers are required to support a Press x1, Hold, and Release action, but may also include Press x2, Press x3, Press x4, and Press x5 actions.

The Actions available are device and scene specific.

Z-Wave Manager will expose the scenes and actions available along with a Slow Refresh Setting that may or may not be supported by the device. Z-Wave manager also has the ability to set a Max Hold Time for the device so that the XP/ZW9 can default to how long it should keep the hold active. This is useful for devices that do not repeat the hold action message every 200ms and the Slow Refresh Setting is not supported by the device. It can also be used with devices that support the Slow Refresh Setting, but hold times are required to be shorter than 55 seconds.

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Information about The Slow Refresh Setting – If a device does not support this, it is required to send the hold action message every 200ms, but some devices do not follow this specification and instead either never repeat the hold action message or do at a 55 second interval which is the value required when the Slow Refresh Setting is activated. The advantage of the Slow Refresh setting is that it does not tie up the Z-Wave network with hold messages every 200ms. The issue with the Slow Refresh setting is that 55 seconds is an eternity for many operations in automation, so we built in a mechanism that can override the system if another hold or release action is not received in the Max Hold Time setting. The Range of the Max Hold Time is 400ms-60000ms which will cover the range of the device whether it supports the Slow Refresh Setting or not.

Below is a screenshot of the Central Scene Controller settings for a Fibaro "The Button" controller.

Once a Central Scene Controller is setup, events and variables will be available in ID 9.x and as far as ID APEX, the device must be added to the workspace just as the Scene Keypads and Virtual Scene Controllers would be added.

There are no variables for the Central Scene controllers with exception to Hold Status, Communication Status and Battery Level where applicable.

Below is a screenshot for the Central Scene Controller events that are created by ID and/or ID APEX.
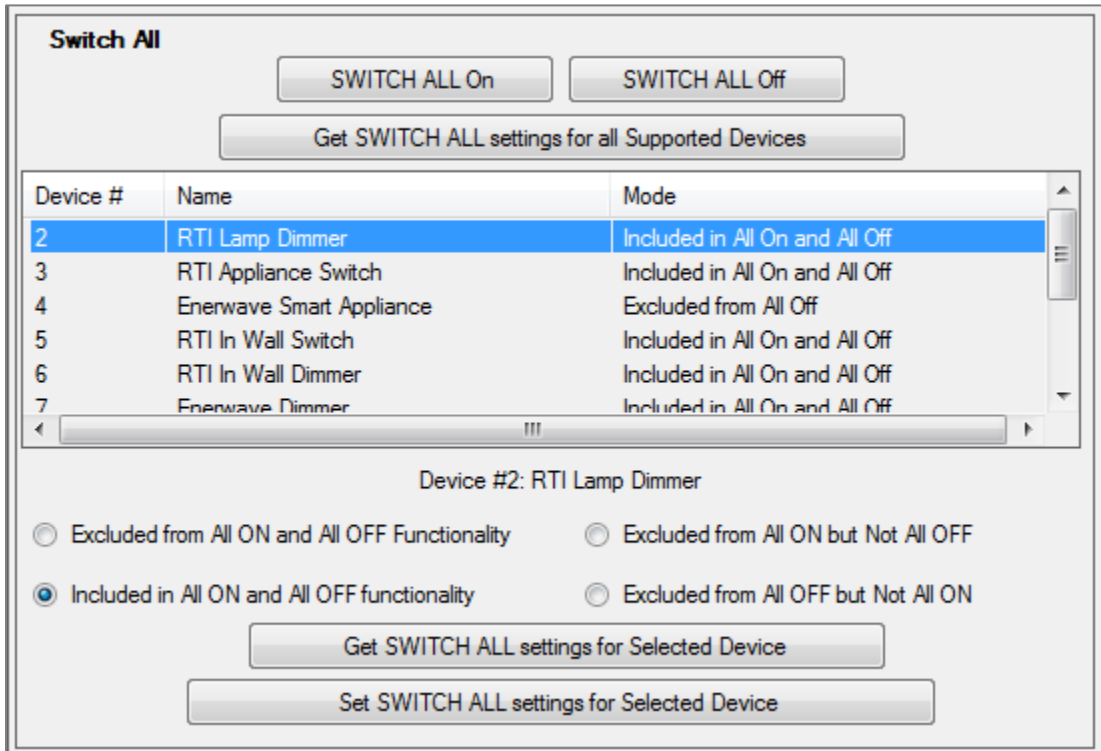

Section 5 – Switch All

The Switch All On and Off functions were available in the previous iteration of Integration Designer, but in ID 9.x and ID APEX, events have been added for Switch All On and Switch All Off.

The functions and events are not tied together light the scene functions and events are, meaning the Switch All functions will not trigger the Switch All events and vice versa.

The Switch All functions should only be used when a switch all command is to be broadcast out to the Z-Wave network, whereas the Switch All event are to be used to trigger macros when a Z-Wave device transmits a Switch All command. When a Z-Wave device transmits a Switch All command it is important not to have Switch All event call out the switch all function as the device that called out the command already would have sent it to the other Z-Wave devices. This is why the events and functions are not tied together.

In Z-Wave Manager, devices can have their ability to react to Switch All On and Off commands independently. To set the Switch All capabilities of the devices, the Switch All section of the ZW9 device in Z-Wave Manger must be used. Not all devices support the Switch All command class and will not be available in the Switch All section of the ZW9 for configuring.

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Below is a screenshot of the Switch All section for the ZW9 in Z-Wave Manager.

The XP will keep track of every device that supports Switch All and its configuration so that it knows what devices need to be polled when a Switch All is received by the ZW9 or sent by the XP.

Switch All events can only be triggered in 5 second intervals preventing multiple events from overlapping each other and triggering multiple events.

The Switch All events in ID APEX are located in ZW9 Source Events just like the Scene events are.